

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

**WETLAND CREATION
(ACRES)**

CODE 658

DEFINITION

A wetland that has been created on a site location which historically was not a wetland or is a wetland but the site will be converted to a wetland with a different hydrology, vegetation type, or function than naturally occurred on the site.

PURPOSE

To create wetlands that has wetland hydrology, hydrophytic plant communities, hydric soil conditions, and wetland functions and/or values.

To increase carbon sequestration and reduce greenhouse gases.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies only to sites where no natural wetland occurred or where a wetland exists, or existed, and the wetland characteristics (hydrology, vegetation, and functions) will be different from what historically occurred.

Upon completion of the practice, the site will meet the current NRCS definition of wetland, if hydric soils exist at the site.

This practice is applicable only if hydrologic conditions can be approximated by modifying drainage and/or artificial flooding of a duration and frequency to

create and maintain wetland conditions during an average annual precipitation event. The wetland class/subclass will be specified.

This practice does not apply to: a Constructed Wetland (656) intended to treat point and non-point sources of water pollution; Wetland Enhancement (659) intended to rehabilitate a degraded wetland where specific functions and/or values are enhanced beyond original conditions; or Wetland Restoration (657) intended to rehabilitate a degraded wetland where the soils, hydrology, vegetative community, and biological habitat are returned to original conditions.

CRITERIA

General Criteria

The landowner shall obtain necessary local, state, and federal permits that apply before the practice is applied.

Water rights and water availability are assured prior to creation if required.

Created wetlands will only be located where the soils, hydrology and vegetation can be modified to meet the current NRCS criteria for wetland.

Establishing vegetative buffers on surrounding uplands to reduce sediment and soluble sediment-attached substances carried by runoff and/or wind.

Document the soil, hydrology and vegetative characteristics of the site and its contributing watershed before alteration.

Criteria for Hydric Soil Conditions

Establish an approximation of the soil microtopography typical for the wetland type(s) being established. Refer to the soil survey for guidelines toward hydric soil descriptions for the specified area. A soil investigation shall be performed to determine conditions needed; to minimize seepage for construction suitability, water supply, and hydric soil.

Criteria for Wetland Hydrology

The hydrology of the site is defined as the rate and timing of inflow and outflow, source, duration, frequency, and depth of flooding, ponding or saturation. The hydrology of the site should make adequate water available approximating the needs of the created wetland. A desired hydrologic regime shall be identified for each project site. Assumptions regarding hydrology shall be based on NRCS approved drainage models, soils data, and aerial photography of suitable reference sites.

The standards and specifications for Dike (356) and Structure for Water Control (587) will be used as appropriate. Refer to the Engineering Field Handbook, Chapters 13, "Wetland Restoration, Enhancement, and Creation," and 6, "Structures," for additional design information. Existing drainage systems will be utilized, removed, or modified as needed to achieve the intended purpose.

Criteria for Hydrology Vegetation

Establish hydrologic vegetation typical for the wetland type(s) being established. Refer to vegetation establishment guidelines within standards and specifications for Tree and Shrub Establishment (612), Pasture and Hay Planting (512) and Wetland Wildlife Habitat Management (644) that consider soil, seed sources, and species.

Preference shall be given to native wetland plants with localized genetic material. Plant materials collected or grown from material collected within a 200-mile radius from the site is considered local.

Where natural colonization of selected species will realistically dominate within 5 years, then natural regeneration can be left to occur.

Adequate substrate material and site preparation necessary for proper establishment of the selected plant species shall be included in the design.

If the targeted hydrophytic vegetation is predominantly herbaceous, several species adapted to the site will be established. Herbaceous vegetation may be established by a variety of methods including: mechanical or aerial seeding, topsoiling, organic mats, etc., over the entire site, or a portion of the site and at densities and depths appropriate.

Forested wetland establishment will include a minimum of three species, where appropriate. Seedling preparation and planting will follow the criteria of Tree Planting (612).

Seed planting rates and site preparation will meet the criteria of Woodland Direct Seeding (652). Seed viability will be checked immediately prior to planting.

Criteria for Wetland Functions

A functional assessment (Hydrogeomorphic Approach or similar method) shall be performed on the site prior to restoration. A “prior to creation” will be prepared to depict existing conditions on the site. A final map will be prepared to depict the effects planned measures will have on the site. Use the Cowardin Wetland Classified System to label habitat types.

Created wetland goals and objectives should include targeted natural wetland functions for the wetland type and the site location.

Criteria to Increase Carbon Sequestration

When the purpose is for carbon sequestration, document the land use and management of the site before alteration.

Select plant species and management options to optimize carbon sequestration.

CONSIDERATIONS

Consider effect of volumes and rates of runoff, infiltration, evaporation, and transpiration on the water budget.

Consider the potential for a change in rates of plant growth and transpiration because of changes in the volume of available soil water.

Consider effects on downstream flows or aquifers that would affect other water uses or users.

Consider effects on wetlands or water-related resources wildlife habitats that would be associated with the practice.

Consider positioning site(s) adjacent to existing wetlands to increase wetland system complexity and diversity, decrease habitat fragmentation, and ensure colonization of the site by wetland flora and fauna.

Consider linking wetlands by corridors wherever appropriate to enhance the wetland’s use and colonization by the flora and fauna.

The nutrient and pesticide tolerance of the plant species planned should be considered where known nutrient and pesticide contamination exists.

Consider effects on temperature of water resources to prevent undesired effects on aquatic and wildlife communities.

Embankments and excavated slopes should be located and shaped in a manner that is compatible with the existing landscape.

Consider that a larger shallower wetland will sequester more carbon.

Consider relationship between offset of greenhouse gases through sequestration, and the creation of greenhouse gases due to wetland creation.

Consider managing water to prevent oxidation of organic matter and increase the build up of new organic matter to increase carbon sequestration and reduce greenhouse gas release to the atmosphere.

PLANS AND SPECIFICATIONS

Specifications for this practice shall be prepared for each site. Specifications shall be recorded using approved specifications sheets, job sheets, narrative statements in the conservation plan, or other documentation. Requirements for the operation and maintenance of the practice shall be incorporated into site specifications.

Management needed to maintain vegetation, including control of unwanted vegetation;

Haying and livestock grazing will be managed to protect and enhance established and emerging vegetation.

OPERATION AND MAINTENANCE

The following actions shall be carried out to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair upkeep of the practice (maintenance):

Any use of fertilizers, mechanical treatments, prescribed burning, pesticides and other chemicals shall not compromise the intended purpose. Biological control of undesirable plant species and pests (e.g., using predator or parasitic species) shall be implemented where available and feasible;

Timing and level setting of water control structures required for the establishment of desired hydrologic conditions or for management of vegetation;

Inspection schedule for embankments and structures for damage assessment;

Depth of sediment accumulation to be allowed before removal is required;

Ditch Plug Specifications

Plugging existing ditches may be a method needed to create wetland hydrology within existing drainage systems. These plugs may be of two types: (a) A broad “earthen plug” designed for water flow over the top in a uniform flow, or (b) a “rock plug” designed for water to flow through and over the top. Ditch plugs will be designed to be stable under expected flow conditions, and meet the following minimum specifications: Earthen plugs may be used for sites with less than 100 acres of drainage area and will be designed with the following minimum specifications: remove accumulated sediment and vegetation from ditch and banks at the plug site. Slope ditch banks to a minimum of 2:1; construct core trench and earthfill as required in dam construction; the top width of the plug will be a minimum of 30 feet while parallel to the water flow. It shall be constructed level and to an elevation below the top bank that will block 75% of the existing ditch depth. The remaining cross-sectional area between the top of the plug and the top bank shall at least equal to 40% of the existing ditch cross-sectional area. It may be necessary in some cases to widen the top width of the channel at the plug site. A 3:1 upstream and an 8:1 downstream transition will be constructed when widening a channel; the upstream face will be no steeper than 5:1 and the downstream face will be no steeper than 20:1; no spillway will be required; consideration should be given to armor plating the plug if soil strength and erodibility is a concern. Rock plugs are constructed to retard or decrease the efficiency of the existing drainage system. They shall be designed with the following minimum specifications: prepare site for an earthen plug: the top width of the rock plug will be

a minimum of 10 feet wide parallel to the water flow. It shall be constructed level and to an elevation below the top bank that will block 75% of the existing ditch depth. The remaining cross-sectional area between the top of the plug and the top bank shall be at least equal to 40% of the existing ditch cross-sectional area. It may be necessary in some cases to widen the top width of the channel at the plug site. A 3:1 upstream and an 8:1 downstream transition will be constructed when widening a channel; the upstream and downstream slopes shall be no steeper than 3:1.

The gradation of the rock shall be:

Individual Stone Weight (pounds) ^{1/}	Percent by Weight
190 to 230	0 – 10
65 to 190	40 – 60
25 to 65	20 – 40
0 to 25	0 – 15

^{1/} The solid weight of stone shall be at least 150 pounds per cubic foot.

Broken concrete conforming to the above gradation requirements may be used, provided its solid weight is at least 130 pounds per cubic foot and free from any protruding reinforcement; the least dimension of an individual stone or concrete piece shall be at least one-third its maximum dimension; no spillway will be required.